We claim:

1. A method of generating a mucosal immune response at a mucosal surface, said method comprising delivering a particulate vaccine composition into or across the skin of a vertebrate subject using a transdermal delivery technique, wherein the vaccine composition comprises an antigen or a nucleic acid encoding said antigen.

2. The method of claim 1 wherein the particulate vaccine composition is delivered using a needleless syringe powder injection device.

3. The method of claim 1 wherein the mucosal immune response is specific for the antigen.

4. The method of claim 3 wherein the mucosal immune response is characterized by an IgA antibody response specific for the antigen.

5. The method of claim 1 wherein the antigen is derived or obtained from a pathogen that enters a subject's body via a mucosal surface.

6. The method of claim 1 wherein the antigen is a viral antigen.

7. The method of claim 1 wherein the antigen is a bacterial antigen.

8. The method of claim 1 wherein the antigen is a live, attenuated organism.

9. The method of claim 1 further comprising the step of coadministering an adjuvant composition to the vertebrate subject.

10. The method of claim 9 wherein the adjuvant composition is particulate.

11. The method of claim 10 wherein the particulate adjuvant composition is delivered into or across the subject's skin using a transdermal delivery technique.

12. The method of claim 9 wherein the vaccine composition and the adjuvant composition are administered to the same site in the subject.

13. The method of claim 9 wherein the vaccine composition and the adjuvant composition are administered concurrently.

14. The method of claim 13 wherein the vaccine composition and the adjuvant composition are combined to provide a single composition.

15. The method of claim 14 wherein the vaccine composition is administered to the subject from a needleless syringe powder injection device.

16. The method of claim 9 wherein the mucosal immune response is specific for the antigen.

17. The method of claim 16 wherein the mucosal immune response is characterized by an IgA antibody response specific for the antigen.

18. The method of claim 9 wherein the antigen is derived or obtained from a pathogen that enters a subject's body via a mucosal surface.

19. The method of claim 9 wherein the adjuvant composition comprises an oligonucleotide containing a CpG motif.

20. The method of claim 9 wherein the adjuvant composition comprises an ADP-ribosylating toxin.

21. The method of claim 20 wherein the adjuvant composition comprises a cholera toxin.

22. The method of claim 9 wherein the adjuvant composition comprises a combination of two or more adjuvants.

23. The method of claim 22 wherein the adjuvant composition comprises a cholera toxin and an oligonucleotide containing a CpG motif.

24. A particulate vaccine composition suitable for delivery into or across skin of a vertebrate subject, said composition comprising:

(a) an antigen or a nucleic acid encoding said antigen;

(b) an ADP-ribosylating toxin as an adjuvant; and

(c) an oligonucleotide containing a CpG motif.

25. The vaccine composition of claim 24 wherein the ADP-ribosylating toxin is a cholera toxin.

26. The vaccine composition of claim 24 wherein the antigen is derived or obtained from a pathogen that enters a subject's body via a mucosal surface.

27. The vaccine composition of claim 24 wherein the antigen is a viral antigen.

28. The vaccine composition of claim 24 wherein the antigen is a bacterial antigen.

29. The vaccine composition of claim 24 wherein the antigen is a live, attenuated organism.

30. A method for treating or preventing a disease caused by the entry of a pathogen into the body of a vertebrate subject via a mucosal surface, said method comprising administering the vaccine composition of claim 26 to a subject in need of treatment or vaccination in an amount sufficient to bring about a mucosal immune response at a mucosal surface of the subject.

31. The method of claim 30 wherein the mucosal immune response is specific for the antigen.

32. The method of claim 30 wherein the vaccine composition is administered into or across the skin of the subject using a transdermal delivery technique.

33. The method of claim 32 wherein the vaccine composition is administered to the subject from a needleless syringe powder injection device.

34. A method for treating or preventing a disease caused by the entry of a pathogen into the body of a vertebrate subject via a mucosal surface, said method comprising:

(a) administering a particulate vaccine composition into or across skin of the subject, wherein the vaccine composition comprises an antigen derived or obtained from the pathogen, or a nucleic acid encoding said antigen; and

(b) coadministering an adjuvant composition to the subject, wherein the adjuvant composition comprises an ADP-ribosylating toxin, and further wherein coadministration of the vaccine and adjuvant compositions is sufficient to bring about a mucosal immune response specific for the antigen.

35. The method of claim 34 wherein the ADP-ribosylating toxin is a cholera toxin.